

CALL FOR GRANT APPLICATIONS (AE2023-0463)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the Data4LEM funded by National Funds through FCT - Portuguese Foundation for Science and Technology, I.P., project reference LA/P/0063/2020

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Area of Work: Engineering

Grant duration: 12 months, starting on 2024-01-04, with the possibility of being renewed until the end of the project.

Scientific advisor: Tiago Manuel Campelos

Workplace: INESC TEC, Vila Real, Portugal

Maintenance stipend: € 1199,64, [according to the table of monthly maintenance stipend for FCT grants](#), paid via bank transfer. Grant holders may be awarded potential supplements, according to a quarterly evaluation process (Articles 19, 21 and 22 of the [Regulations for Grants of INESC TEC](#) and Annex II), up to a maximum limit of 50% of the monthly maintenance stipend.

INESC TEC supports costs with registration, enrolment or tuition fees, during the grant duration, under the terms established in the internal document: "[Payment of Tuition fees to grant holders](#)".

The grant holder will benefit from health insurance, supported by INESC TEC.

2. OBJECTIVES:

- Learning, understanding, conceiving and developing Explainable Artificial Intelligence (xAI) models to support the understanding of synthetic data generation models;
- Generate explanations for process of automatic generation new synthetic datasets, representative of real data, regarding different energy resources;
- Writing scientific papers as part of a process that could end up in the accomplishment of a PhD.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

- Data analysis considering different types of data, e.g., electricity consumption, consumer behavior, PV and wind generation, Electric vehicles and electricity market prices based on multiple open-access data sets. The data will be analyzed and processed considering the identification of any missing/erroneous entries, adjustment of data granularity, format, etc.
- Study and review xAI approaches for synthetic data generation models;
- Development of novel xAI model to explain the synthetic data generation process. Being the most suitable existing model from state-of-the-art review, SHAP will be used as basis for the explanations. SHAP will be integrated with a GPT3-based language model, hence boosting the adaptation and richness of explanations, as well as enabling different types of explanation types, namely through plots, graphs, tabular and text.
- Writing project reports and dissemination material

4. REQUIRED PROFILE:

Admission requirements:

Student in Electrical Engineering or similar

The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

Preference factors:

- Experience in Python, Matlab or AMPL programming languages
- Experience in the development of artificial intelligence and optimization models
- Fluency in English (spoken and written)
- Fluency in Portuguese (spoken and written)

Minimum requirements:

- Expert in a programming language

5. EVALUATION OF APPLICATIONS AND SELECTION PROCESS:

Selection criteria and corresponding valuation: the first phase comprises the Academic Evaluation (AC), based on the criteria referred to in Article 12 of the [Regulations for Grants of INESC TEC](#), while the second phase comprehends the Individual Interview (EI). All factors are evaluated on a scale of 0 to 100, taking into account the applicants' merit, suitability and conformity with the preference factors.

The weight of the AC factors are as follows: Academic Qualifications (FA, 55%), Scientific Publications (PC, 10%), Experience (EX, 10%) and Motivation Letter (CM, 25%).

Candidates who score less than 50 points in the AC average will be considered excluded on absolute merit. The top five candidates approved on absolute merit will be qualified for the individual interview. The Final Grade (CF) is obtained by the weighted average of AC (80%) and EI (20%).

The Selection Jury is composed of the following members:

President of the Jury: Tiago Manuel Campelos

Full member: Tiago André Soares

Full member: Arsénio Reis

Substitute member: João Barroso

Release of results and prior hearing: the results of the selection process, as well as the terms and procedures for prior hearing, will be released to the applicants by email, under the terms referred to in Article 13 of the Regulations for Studentships and Fellowships of INESC TEC.

6. FORMALISATION OF APPLICATIONS:

Application Documents:

1. Motivation letter;
2. Curriculum Vitae (must include the list of previous fellowships, their type, beginning and end dates, funding entities and host institutions);
3. Certificate or diploma degree;
4. Proof of enrollment in a degree awarding study cycle or in a non degree awarding Higher Education program.
 - The proof of enrollment may be presented just during the grant hiring stage.
5. Signed declaration stating the infringement of the grant holder's duties (article 14, no. 4)
6. Documental evidence to support the country of residence, residence permit or other legally equivalent document, in cases where the applicant is a foreigner or non-resident in Portugal - valid until the beginning of the grant.
7. Other supporting documents relevant to the final assessment.

Failure to deliver the required documents within the 90-day period after the date of the notice of the conditional awarding of the grant implies its cancellation.

Application period: From 2023-11-30 to 2023-12-15

Submission of applications: the application will be formalised by submitting the form available in the *Work With Us* section of INESC TEC website.

7. BINDING LEGISLATION AND REGULATION

The hiring process shall comply with the current legislation regarding the Research Grant Holder Statute, approved by Law no. 40/2004 of August 18, in its current wording, as well as by the [Regulations for Grants of INESC TEC](#) and for [FCT Grants Regulation in force](#).

For more information, please check the [Regulations for Grants of INESC TEC](#) and relevant annexes at www.inesctec.pt/bolsas



Governo da República Portuguesa

FCT

Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA